IN THE CLAIMS

1.   (Original) A method of detecting a defect on a substrate, the method comprising:

irradiating a light on a substrate, wherein the substrate has a plurality of device units formed thereon with the same pattern, the plurality of device units each including a plurality of pixels;

measuring image information for the plurality of pixels by sensing the light reflected by a surface of the substrate from the irradiating light;

calculating a raw datum of a target pixel by subtracting the image information of a corresponding pixel from the image information of the target pixel, wherein the target pixel is a subject pixel for detecting a defect, and wherein the corresponding pixel is located in a first device unit that is adjacent to a second device unit that includes the target pixel, the corresponding pixel corresponding to the target pixel;

presetting a threshold region including at least one pair of upper and lower limits;

comparing the threshold region with the raw datum; and

marking the target pixel as defective if the raw datum is within the threshold region.

2.   (Original) The method of claim 1, wherein the substrate includes a wafer for fabricating a semiconductor device, and the plurality of device units are unit cells operating as independent electronic circuits on the wafer.

3.   (Original) The method of detecting a defect on a substrate of claim 1, wherein the irradiating light includes a short-wave light.

4.   (Original) The method of detecting a defect on a substrate of claim 3, wherein the short-wave light includes an ultraviolet light.

5.   (Original) The method of detecting a defect on a substrate of claim 1, wherein the image information includes binary digital information.

6. (Original) The method of detecting a defect on a substrate of claim 5, wherein the image information represents a level on a gray scale, wherein the gray scale is distinguishable by a relative density of black and white.

7. (Original) The method of detecting a defect on a substrate of claim 6, wherein the gray scale is divided into 256 different levels.

8. (Original) The method of detecting a defect on a substrate of claim 1, further comprising displaying the defective pixel on a monitor.

9. (Original) An apparatus for detecting a defect on a substrate, the apparatus comprising:

a support for supporting a substrate, wherein the substrate has a plurality of device units formed thereon, each device unit including a plurality of pixels;

a light source for irradiating a light on the substrate;

an image detector for sensing a reflecting light reflected by a surface of the substrate from the light source;

a data processing unit for calculating a raw datum of a target pixel by subtracting digital image information of a corresponding pixel from digital image information of the target pixel, wherein the corresponding pixel is located in a first device unit that is adjacent to a second device unit that includes the target pixel, the corresponding pixel corresponding to the target pixel;

a setting unit for presetting a threshold region, wherein the threshold region includes at least one pair of upper and lower limits; and

a judging unit for judging whether or not the target pixel is a defective pixel by comparing the raw datum of the target pixel with the threshold region.

10. (Original) The apparatus of claim 9, wherein the substrate is a wafer for fabricating a semiconductor device and the plurality of device units are unit cells operating as independent electronic circuits on the wafer.

11.   (Original) The apparatus of claim 9, wherein the light in the light source includes a short-wave light.

12.   (Original) The apparatus of claim 9, wherein the short-wave light includes an ultraviolet light.

13.   (Original) The apparatus of claim 9, wherein the image information is expressed as a gray scale distinguishable by a relative density of black and white.

14.   (Original) The apparatus of claim 9, further comprising a monitor for displaying a defective pixel and the raw datum of the defective pixel.

15.   (Original) The apparatus of claim 9, wherein the image detector includes a photo-sensor.

16.   (Original) The apparatus of claim 9, wherein the image detector generates the analog image information for each pixel of each device units.

17.   (Original) The apparatus of claim 16, further comprising an analog-to-digital converter for converting the analog image information to the digital image information.

18.   (Original) The apparatus of claim 9, wherein the plurality of device units each have the same pattern.

19.   (Original) A method of detecting a defect on a substrate, the method comprising:
irradiating a light on a substrate, wherein the substrate has a plurality of device units on a surface thereof, each device unit including a plurality of pixels;
measuring image information for the plurality of pixels by sensing the light reflected by a surface of the substrate from the irradiating light;
calculating a raw datum of a target pixel by subtracting the image information of a corresponding pixel from the image information of the target pixel, wherein the target pixel is a

subject pixel for detecting a defect, wherein the corresponding pixel is a pixel located in a first device unit and corresponds to the target pixel, and wherein the first device unit is located adjacent to a second device unit that includes the target pixel;

presetting a threshold region including at least one pair of upper and lower limits; and

comparing the raw datum with the threshold region.

20.   (Original) The method of claim 19, further comprising marking the target pixel as defective if the raw datum is within the threshold region.

21.   (Original) The method of claim 19, wherein the plurality of device units each have the same pattern.

22.   (Original) The method of claim 19, wherein the irradiating light includes a short-wave light.

23.   (Original) The method of claim 22, wherein the short-wave light includes an ultraviolet light.

24.   (Original) The method of claim 19, wherein the image information includes binary digital information.

25.   (Original) The method of claim 24, wherein the image information represents a level on a gray scale, wherein the gray scale is distinguishable by a relative density of black and white.

26   (Original) The method of claim 25, wherein the gray scale is divided into 256 different levels.

27.   (Original) The method of claim 19, further comprising displaying a defective pixel on a monitor.